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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/868,716	06/20/2001	Jurgen Beyerer	34691/234885	3478

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EXAMINER
YAM, STEPHEN K

ART UNIT	PAPER NUMBER
2878	

DATE MAILED: 12/03/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Applicati n No. 09/868,716	Applicant(s) BEYERER ET AL.	
	Examiner Stephen Yam	Art Unit 2878	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Peri d f r Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 November 2002* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *30-40,42 and 45-47* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *30-40,42 and 45-47* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

This action is in response to Amendments and remarks filed on November 5, 2002. Claims 30-40,42 and 45-47 are currently pending.

Specification

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Objections

1. Claims 35 and 45 are objected to because of the following informalities:

In Claim 35, all the limitations appear to already be defined in parent Claim 30- it is unclear whether the limitations simply redefine the processing step in Claim 30, or refer to a second, identical processing step.

In Claim 45, line 14, "the image" lacks proper antecedent basis.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 30-40, 42, 46, and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Roy et al. US Patent No. 5,956,134 in view of Pöhlandt US Patent No. 5,996,681.

Regarding Claim 30, Roy et al. teach a device for detecting defects comprising two light sources (79) (see Fig. 2) from different directions, recording by means of a camera (60) the illuminated workpiece to produce recorded data comprising a recorded image (see Col. 7, lines 31-32), and processing the recorded image in a computer (90) (see Col. 7, lines 16-18) by comparing the recorded image with a record of reference data (see Col 7, lines 31-37). Inherently, shadows are produced due to the light sources and the inclination of the bumps, and that the shadows are captured in the recording of images. Regarding Claim 31, Roy et al. teach the camera (60) arranged at a fixed location, mounted on a frame (52). Regarding Claim 32, Roy et al. teach the camera (60) including a lens (64) wherein the camera is encased in at least a portion of the lens (see Fig. 3). Regarding Claim 33, Roy et al. teach a processing step of exchanging signals between the computer and a stored program control (see Col. 7, lines 3-7). Regarding Claim 34, Roy et al. teach performing a qualitative or quantitative image evaluation on the recorded image (see Col 7, lines 31-37). Regarding Claim 37, Roy et al. teach the recording and processing of a first image (see Col. 15, lines 12-14) and a second image (see Col. 15, lines 14-18). Regarding Claim 38, Roy et al. teach the image processing step including a position correction (see Col. 7, lines 3-7). Regarding Claims 39 and 40, Roy et al. teach the position correction including recording reference marks (see Fig. 6a, 6b, 7a, 7b, and Col. 8, lines 25-29), where the reference marks are lines (Fig. 7a and 7b) and/or dots (Fig. 6a and 6b) on a base. Regarding Claim 42, Roy et al. teaches the image processing step comprising a defect detection (see Col. 6, lines 2-13 and Col. 7, lines 35-37). Roy et al. do not teach detecting

defects in a shot core or core packet. Pöhlandt teaches (see Fig. 1) a method for detecting defects in a shot core (3) or core packet in the foundry industry by capturing (5) and analyzing (6) an image. It would have been obvious to one of ordinary skill in the art at the time the invention was made to detect defects in a shot core or core packet as taught by Pöhlandt in the method of Roy et al., to provide non-contacting defect detection and scanning for quality control (see Pöhlandt- Col. 4, lines 65-67).

Regarding Claim 36, Roy et al. in view of Pöhlandt teach the method as taught in Claim 30, according to the appropriate paragraph above. Roy et al. and Pöhlandt do not teach the comparing step including a coarse correlation with the recorded data. It is well known in the art to perform a coarse correlation to quickly determine the alignment requirements and verify the positions of the leads without a complex, time-consuming analysis. It would have been obvious to one of ordinary skill in the art at the time the invention was made to perform a coarse correlation between the recorded image and the reference image, to improve the speed and accuracy of the detection process by aligning two images to be compared.

Regarding Claims 46 and 47, Roy et al. in view of Pöhlandt teach the method as taught in Claim 30, according to the appropriate paragraph above. Roy et al. and Pöhlandt do not teach operating the light source in sequence or with color differentiation. It is well known in the art to modulate the light sources in a defect detection system using a variety of methods including different lighting sequences and different wavelengths of light in conjunction with a color optical detector to improve detection abilities. It would have been obvious to one of ordinary skill in the art at the time the invention was made to operate the light sources in sequence or with different

colors in the method of Roy et al. in view of Pöhlandt, to provide multiple lighting scenarios to provide multiple detection images for comparison to enhance defect detection.

3. Claim 45 is rejected under 35 U.S.C. 103(a) as being unpatentable over Roy et al. in view of Pöhlandt, further in view of Maeda et al. US Patent No. 6,169,282.

Regarding Claim 45, Roy et al. teach a device for detecting defects comprising two light sources (79) (see Fig. 2) from different directions, recording by means of a camera (60) the illuminated workpiece to produce recorded data comprising a recorded image (see Col. 7, lines 31-32), and processing the recorded image in a computer (90) (see Col. 7, lines 16-18) by comparing the recorded image with a record of reference data (see Col 7, lines 31-37). Inherently, shadows are produced due to the light sources and the inclination of the bumps, and that the shadows are captured in the recording of images. Roy et al. do not teach detecting defects in a shot core or core packet, or a brightness adjustment for the gray-scale image. Pöhlandt teaches (see Fig. 1) a method for detecting defects in a shot core (3) or core packet in the foundry industry by capturing (5) and analyzing (6) an image. Roy et al. and Pöhlandt do not teach adjusting the brightness of the gray-scale values of the image. Maeda et al. teach (see Fig. 2) a defect detection system that compares two image signals on a computer (see Col. 2, lines 55-65), and adjusts (12, 13) the brightness for adapting the gray-scale values of the image (see Col. 5, lines 14-16 and 19-23). It would have been obvious to one of ordinary skill in the art at the time the invention was made to detect defects in a shot core or core packet as taught by Pöhlandt and adjust the brightness as taught by Maeda et al. in the method of Roy et al., to provide non-contacting defect detection and scanning for quality control (see Pöhlandt- Col. 4, lines 65-67)

and equalize the brightness between the two compared values for improved comparison (see Maeda et al.- Col. 3, lines 14-22).

Response to Arguments

4. Applicant's arguments with respect to claims 30-40 and 42 have been considered but are moot in view of the new ground(s) of rejection.

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen Yam whose telephone number is (703)306-3441. The examiner can normally be reached on Monday-Friday 8:30am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Porta can be reached on (703)308-4852. The fax phone numbers for the organization where this application or proceeding is assigned are (703)308-7724 for regular communications and (703)308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

S.Y.

SY
December 2, 2002

DAVID PORTA
SUPERVISORY PATENT EXAMINER
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